DESCHUTES COLLABORATIVE FOREST PROJECT

November 20, 2015

John Allen, Forest Supervisor
U.S. Forest Service – Deschutes National Forest
63095 Deschutes Market Road
Bend, Oregon 97701

Mr. Allen:

On behalf of the Steering Committee and all Deschutes Collaborative Forest Project (DCFP) stakeholders, I respectfully submit the attached recommendations for consideration by the Deschutes National Forest in the planning and implementation of restoration projects. These recommendations, based on locally developed science and informed by stakeholder values, address the restoration of dry mixed-conifer forest types within the DCFP landscape.

Over the past year and a half, members of the DCFP Restoration Planning Subcommittee have engaged in an intensive learning process tied closely to cutting-edge local research undertaken by The Nature Conservancy and Oregon State University on the ecology of mixed-conifer forests within the DCFP landscape. The group has participated in on-the-ground research, dialogued with researchers about preliminary findings, and engaged in facilitated discussions about members' social values. The outcome of this intensive collaboration is a robust set of restoration recommendations that we feel confident fulfill DCFP goals and meet the intent of the Collaborative Forest Landscape Restoration Act (CFLRA) to advance "collaborative, science-based ecosystem restoration" that is ecologically, economically, and socially sustainable.

On November 10th, the DCFP Steering Committee reviewed and endorsed the recommendations advanced by the Subcommittee. Again, the recommendations were evaluated through the lens of ecological, economic, and social sustainability to ensure they were based on sound science, consistent with CFLRA and DCFP goals, and broadly supported by community stakeholders. I am pleased to report that the recommendations were approved unanimously, which speaks volumes about the strength of our collaborative and the social license we are capable of creating through the process of shared learning and dialogue.

These recommendations represent an evolution and dramatic improvement from our prior dry mixed-conifer recommendations and we would appreciate the opportunity to meet with you and your staff to discuss them further as you consider their relevance and applicability in project planning and implementation.

Thank you, John, for the ongoing engagement and commitment that you and your staff make to the Deschutes Collaborative Forest Project. Together we are building a model for restoration today that will make our forests and communities healthier for decades to come.

Sincerely,

Alan Unger

Alan Unger
Chair, DCFP Steering Committee

Cc: Kristie Miller, Sisters Ranger District; Kevin Larkin, Bend-Ft. Rock Ranger District
Attachments: Dry Mixed-Conifer Recommendations

Dry Mixed-Conifer Restoration Recommendations

Approved by Deschutes Collaborative Forest Project Steering Committee on November 10, 2015

Background

The Deschutes Collaborative Forest Project (DCFP) Restoration Planning Sub-committee (RPSC) is using a framework developed through the Kew Mixed-conifer Forest Development and Disturbance History Study (Kew Study). This local, Deschutes National Forest-specific research on forest development and disturbance dynamics is helping to inform our understanding of historic and current conditions within the mixed-conifer forests of the DCFP landscape. This framework is the basis for the following recommendations, which aim to provide guidance to the Forest Service on collaborative desired future conditions for each of the seven unique mixed-conifer types at the landscape- project-, and stand-scale. The Kew Study provides detailed data describing forest structure and species composition for each of the seven mixed-conifer types, their distribution across the local environmental/climate gradient, and the relationship between local environment, vegetation, and historical fire regimes within the study area.

The recommendations that follow pertain to three of the seven mixed-conifer types; specifically the three driest types of mixed-conifer forest found in the Kew Study area. Recommendations for the remaining (moist) mixed-conifer forest types are forthcoming from the RPSC.

RPSC recommendations address restoration needs and collaborative desired future conditions at three scales:

1. **Landscape-scale**: Describe restoration needs and DCFP desired future conditions in terms of forest patterns, processes, dynamics (e.g., biophysical environment, natural disturbance regimes, and broad-scale vegetation) that are best addressed at the scale of the DCFP landscape (257,000 acres), while considering conditions more broadly across the Deschutes NF (1.6 million acres).
2. **Project-scale:** Describe restoration needs and DCFP desired future conditions in terms of the local drivers like topography, landscape position, historic fire regime, and management history that influence the distribution, arrangement, placement, and type of treatments within NEPA project areas.
3. **Stand-scale:** Describe restoration needs and DCFP desired future conditions in terms of species composition, structure and pattern consistent with site specific drivers like topography, landscape position, interactions with historic fire regime, and management history to restore resilient conditions at the scale of individual successional patches or stands.

Overarching Principles and Areas of Agreement/Disagreement

We share a common interest in increasing forest resilience within the Kew project area, the DCFP landscape, and the Deschutes National Forest more broadly. The majority of peer-reviewed research suggests that forest resilience (to climate shifts and natural disturbances such as fire, insects, and pathogens) in fire-adapted forest ecosystems is the product of landscape-scale heterogeneity (variability) in terms of the distribution, proportion and arrangement of forest types across local and regional biophysical landscape. Furthermore, forest resilience at finer scales (e.g., project- and stand-scale) is the product of forest structure, species composition, and the spatial arrangement of individual trees, clumps, and openings that impart resilience and resistance to climate shifts and natural disturbances such as fire, insects and pathogens.

Therefore, our collaborative is interested in efforts to promote forest resilience at the landscape, project, and stand-scales through treatments that mimic (and are consistent with) historical conditions (i.e. historic range of variability) in terms of the distribution, proportion and arrangement of forest types across the landscape (the focus of landscape- and project-scale recommendations that follow). We are similarly interested in treatments that aim to restore forest structure, species composition, and spatial arrangement within forest types and stands (the focus of stand-scale recommendations that follow). Together, these conditions and characteristics were the product of interactions between climate, topography, disturbance, and forest vegetation that created resilient conditions over long periods of time. We also believe that sustainable forest restoration must be based on a collaborative process that identifies and considers all stakeholder interests and values (ecological, social, and economic), including if and how they should be incorporated in restoration recommendations.

We agree on many overarching principles or general elements of restoring resilient forests across the DCFP landscape.

Areas of Broad RPSC Agreement
• Promoting forest resilience through active restoration • Using best available science and local data on the historical range of variability (HRV) to guide restoration objectives and activities, including appropriate structure (size & age-class diversity), density, species composition, and spatial pattern for each mixed-conifer type • Promoting, enhancing, and protecting old-growth forest structure • Retaining snags • Incorporating wildlife and aquatic habitat needs, particularly threatened and endangered species • Restoring understory diversity • Restoring meadows • Using restoration treatments to protect and sustain economic values • Restoring forest structure and species composition that is consistent with the historical fire regime (e.g., for the three dry mixed-conifer forest types restore natural low-severity fire effects and ecosystem functions (e.g., ponderosa pine recruitment, understory diversity, reduced risk of uncharacteristic proportions of high severity fire) • Resize the existing transportation system (roads and trails) - close, decommission, reroute, maintain, and construct - to restore or improve ecological conditions and meet management needs

Landscape-scale Recommendations

Describe restoration needs and DCFP desired future conditions in terms of forest patterns, processes, dynamics (e.g., biophysical environment, natural disturbance regimes, and broad-scale vegetation) that are best addressed at the scale of the DCFP landscape (257,000 acres), while considering conditions more broadly across the Deschutes NF (1.6 million acres).

1. Use the best available science and local data to inform treatment objectives, location, and distribution to achieve desired future conditions for the three dry mixed-conifer forest types in the appropriate places, arrangement, and amount across the landscape

2. Restore forest conditions within the three dry mixed-conifer types that are consistent with their historical disturbance regime (i.e., fire, insects, and disease) and effects (see stand-scale recommendations below for more refined stand-level characteristics):

   Persistent Ponderosa Pine Type:

   - Frequent (4-6 fires per century), low intensity/low severity fire facilitating the development of large, fire-tolerant ponderosa pines, periodic recruitment of individual large ponderosa pine snags, diverse native understory vegetation, and resilience to future climate shifts/drought and natural disturbances

   Ponderosa Pine/Lodgepole Pine Type:

   - Frequent (4-6 fires per century), low to moderate intensity/severity fire facilitating the development of large, fire-tolerant ponderosa pine while retaining scattered lodgepole pine as a minor species, periodic recruitment of individual large ponderosa pine and lodgepole pine snags, diverse native understory vegetation, and resilience to future climate shifts/drought and natural disturbances

   Ponderosa Pine/Grand Fir Type:

   - Frequent (4-6 fires per century), low to moderate intensity/severity fire facilitating the development of large, fire-tolerant ponderosa pine and isolated large, fire-tolerant grand fir, periodic recruitment of individual large ponderosa pine and grand fir snags, diverse native understory vegetation, and resilience to future climate shifts/drought and natural disturbances
3. Use restoration treatments to reduce the overabundance of dense, homogeneous mid-successional closed stands over time in the three dry mixed-conifer types consistent with historical range of variability
4. Restore forest and stand conditions within the three dry mixed-conifer types (persistent ponderosa pine, ponderosa pine/lodgepole pine, and ponderosa pine/grand fir types) such that when natural fires do occur, high severity patches will be small (e.g., 10s to 100s of acres rather than 1,000s to 10,000s of acres) and isolated across the landscape (e.g., <10% of this type in high severity patches in this type in a hypothetical average fire)
5. Use restoration treatments to increase habitat suitability and connectivity for key native indicator species that utilize the dry mixed-conifer forest types within the DCFP landscape and Deschutes National Forest
   - Restore appropriate historical forest species composition, stand structure, spatial pattern and process for each mixed-conifer forest type (see Stand-scale Recommendations below), while maintain the best available interim habitat
   - Restore native understory vegetation diversity
6. Resize the existing transportation system (roads and trails) - close, decommission, reroute, maintain and construct - to restore or improve ecological conditions and meet management needs
7. Recognize and take into account important local values in the planning, design, and implementation of restoration activities at the landscape-, project- and stand-scale in the three dry mixed-conifer forest types, including:
   - Economic values (e.g., forest products industry and infrastructure, forest jobs, outdoor recreation sector)
   - Social values (e.g., recreation access, quality of life, scenic views, community wildfire protection, wildlife)
   - Ecological values (e.g., natural disturbance processes, forest/soil productivity, flora and fauna biodiversity, wildlife habitat)

Dry Mixed-Conifer Restoration Recommendations

Approved by Deschutes Collaborative Forest Project Steering Committee on November 10, 2015

Project-scale Recommendations

Describe restoration needs and DCFP desired future conditions in terms of the project-scale drivers like topography, landscape position, historical fire regime, and management history that influence the distribution, arrangement, placement, and type of restoration treatments within NEPA project/planning areas.

1. Use the best available science and local data to inform treatment objectives, location, and distribution to achieve desired future conditions for the three dry mixed-conifer forest types in the appropriate places, arrangement, and amount within a given project/planning area
2. Use the principal environmental drivers (topography, elevation/precipitation, solar insolation) to determine where in environmental space the three dry mixed-conifer types occurs within the Kew Study Area*:

   Persistent Ponderosa Pine Type:
   - Hot: mean annual maximum temperature 54-57° Fahrenheit
   - Dry: 27-30 inches annual precipitation
   - Elevation: 4500-4800 feet
   - Slope: generally greater 5 degrees

   Ponderosa Pine/Lodgepole Pine Type:
   - Hot: mean annual maximum temperature 54-57° Fahrenheit
   - Dry: 25-38 inches annual precipitation (typically less than 32")
   - Elevation: 4500-5000 feet
   - Slope: generally less than 5 degrees with some small topographic feature like rocky ridges

   Ponderosa Pine/Grand Fir Type:
   - Hot/Warm: mean annual maximum temperature 54-57° Fahrenheit, with rare exceptions below 54°
   - Dry/Moist: 30-40 inches annual precipitation, with rare exceptions below 30" where subsurface water is present (i.e., near springs)
   - Elevation: 4900-5700 feet, with rare exceptions below 4900' where subsurface water is present (i.e., near springs)
   - Slope: >5 degrees
3. Consider past management, and their legacy/effects on current forest conditions when determining the appropriate restoration pathway (e.g., mechanical treatment and reintroduction of frequent (15-20 year interval) prescribed fire) to restore desired future conditions over time given the starting condition
4. Restore forest and fuel conditions within the three dry mixed-conifer types that facilitate the use of prescribed fire to promote the development of the forest structure and species compositions described in the stand-scale recommendations
   - Consider fire and smoke impacts on public health and safety when determining appropriate levels of prescribed fire to achieve restoration objectives
5. Use restoration treatments to increase habitat suitability and connectivity for key native indicator species that utilize the mixed-conifer forest types within projects being considered

- Restoring appropriate historical forest species composition, stand structure, spatial pattern and process for each mixed-conifer forest type (see Stand-scale Recommendations below), while maintaining adequate amounts of available interim habitat
- Restoring native understory vegetation diversity

6. Use restoration treatments to protect and sustain current and future economic values from the forest, including local recreation assets and commercial forest products

* The results of the Kew Study provide specific ranges for the environmental drivers identified in the recommendations above. These ranges are appropriate for projects in and around the 30,000 acre Kew Study area. The same environmental variables are important drivers across the broader DCFP landscape. However it is important that additional analysis is used to determine the appropriate ranges for other project areas.

Stand-scale Recommendations

Describe restoration needs and DCFP desired future conditions in terms of species composition, structure and pattern consistent with site specific drivers like topography, landscape position, interactions with historic fire regime, and management history to restore resilient conditions at the scale of individual successional patches and stands within project/planning areas.

1. Use the best available science and local data to inform stand-level goals and objectives that will achieve DCFP desired future conditions
2. Restore forest structure, density, species composition, and spatial arrangement of trees, tree clumps, openings, and understory vegetation consistent with historical conditions for the three dry mixed-conifer forest types:

<u>Persistent Ponderosa Pine Type:</u>

- Use restoration treatments to shift species composition to ponderosa pine dominance and reduce lodgepole pine and grand fir, putting stands on a trajectory so that a majority of basal area (>90%) is composed of large diameter, fire-tolerant ponderosa pine, and less than 10% lodgepole pine and grand fir
- Within the historic range of variability for the project area, retain old-growth of all species and sizes. Due to their infrequency in the dry mixed-conifer stands of the Kew Study Area, retain old-growth trees of all species as identified by morphological characteristics (e.g., Van Pelt or similar guide) with some exceptions for hazard trees
- Where young ponderosa pine cohorts do not exist, create openings based on the best available science of historical opening sizes (e.g., .1 to 2 acres), that are irregularly shaped (e.g., linear, sinuous “blobs”, not round) and retain desired ponderosa pine where they are found
- Retain small dense patches/clumps of persistent ponderosa pine mixed-conifer, where they are consistent with the historical range of variability at the project-scale

<u>Ponderosa Pine/Lodgepole Pine Type:</u>

- Use restoration treatments to shift species composition to ponderosa pine dominance, particularly where gentle topographic features (i.e., small rises, rocky ridges and outcrops) favor ponderosa pine, while maintaining lodgepole pine co-dominance in

flats, putting stands on a trajectory so that a majority of basal area (60-80%) is composed of large diameter, fire-tolerant ponderosa pine and 20-40% lodgepole pine
- Within the historic range of variability for the project area, retain old-growth of all species and sizes. Due to their infrequency in the dry mixed-conifer stands of the Kew Study Area, retain old-growth trees of all species as identified by morphological characteristics (e.g., Van Pelt or similar guide) with some exceptions for hazard trees
- Where young ponderosa pine cohorts do not exist, create openings based on the best available science of historical opening sizes (e.g., .1 to 2 acres), that are irregularly shaped (e.g., linear, sinuous "blobs", not round) and retain desired ponderosa pine where they are found
- Retain small dense patches/clumps of ponderosa pine/lodgepole pine mixed-conifer, particularly where they exist on flat topography and are consistent with the historical range of variability at the project level

Ponderosa Pine/Grand Fir Type:
- In many cases, the ponderosa pine/grand fir type is the product of overstory harvesting of large ponderosa pines followed by fire exclusion resulting in a structural/compositional shift from large ponderosa pine dominance to small, medium and large grand fir dominance
- Use restoration treatments to shift species composition to ponderosa pine dominance and reduce lodgepole pine and grand fir, putting stands on a trajectory so that a majority of basal area (~80%) is composed of large diameter, fire-tolerant ponderosa pine, while retaining the largest, most fire-tolerant grand fir, comprising ~20% of basal area
- Within the historic range of variability for the project area, retain old-growth of all species and sizes. Due to their infrequency in the dry mixed-conifer stands of the Kew Study Area, retain old-growth trees of all species as identified by morphological characteristics (e.g., Van Pelt or similar guide) with some exceptions for hazard trees
- Where young ponderosa pine cohorts do not exist, create openings based on the best available science of historical opening sizes (e.g., .1 to 2 acres), that are irregularly shaped (e.g., linear, sinuous "blobs", not round) and retain desired ponderosa pine where they are found
- Retain small dense patches/clumps of ponderosa pine/grand fir mixed-conifer, where they are consistent with the historical range of variability at the project-scale

3. Restore forest and fuel conditions within the three dry mixed-conifer types that facilitate the use of prescribed fire to promote the development of the forest structure and species compositions described above
   - If necessary given current (starting) stand conditions, mechanically treat stands prior to prescribed burning to reduce basal areas and crown closures in order to minimize mortality to merchantable timber even when burning at the extreme top end of burn windows. Caveat: stands within USFS Inventoried Roadless Areas and Wilderness will not be mechanically treated prior to burning
   - Consider fire and smoke impacts on public health and safety when determining appropriate levels of prescribed fire to achieve restoration objectives
4. Leave a range of within-stand densities appropriate for the environmental setting/productivity where each of the three dry mixed-conifer types are found

5. Restore appropriate historical forest structure, density, species composition, and spatial arrangement of trees, tree clumps, and openings consistent with the habitat requirements of key native indicator species that utilize each of the three dry mixed-conifer types
6. Where indications of past or present meadow exist, remove encroaching conifers to reestablish functioning meadow ecosystems

Glossary of Terminology

(Borrowed from Upper Deschutes Basin Fire Learning Network Principles of Restoration)

Adaptive Management: A type of natural resource management in which decisions are made as part of an ongoing process. Adaptive management combines planning, implementing, monitoring, research, evaluating, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify future management methods and policy. (AZ Guiding Principles)

Biodiversity: The variety of life forms and processes including complexity of species, communities, gene pools, and ecological functions (Rickleffs, 1986, Ecology).

Biophysical Settings (BpS): Represents the vegetation that may have been dominant on the landscape prior to Euro-American settlement and is based on both the current biophysical environment and an approximation of the historical disturbance regime. It is a refinement of the Environmental Site Potential layer; in this refinement, we attempt to incorporate current scientific knowledge regarding the functioning of ecological processes – such as fire – in the centuries preceding non-indigenous human influence. (Landfire 2007)

Ecologically sustainable: Emphasizing and maintaining the underlying ecological processes that ensure long-term productivity of goods, services, and values without impairing the productivity of the land. (Source: ICBEMP Draft EIS) ALSO: Meeting the needs of the current generation without compromising the ability of future generations to meet their needs. Ecological sustainability entails maintaining the composition, structure and processes of a system, as well as species diversity and ecological productivity. The core element of sustainability is that it is future-oriented. (Committee of Scientists Report, 1999.)

Economic feasibility: The ability to obtain the financial resources necessary to conduct restoration projects on the ground. It is anticipated that these resources may come from congressionally appropriated funds, the commercial value of byproducts removed during restoration, and/or private philanthropy. An assessment of economic feasibility will include both a project budget and anticipated sources of funding to carry out the work proposed. (MT Guiding Principles)

Ecosystem Function: The interactions among organisms and interactions between organisms and their environment. (SER 2004)

Ecosystem Process: Ecosystem Function (SER 2004) and the actions or events that link organisms and their environment, such as predation, mutualism, successional development, nutrient cycling, carbon sequestration, primary productivity, and decay. Natural disturbance processes often occur with some periodicity (From Webster's dictionary, adapted to ecology).

Ecosystem Resilience: The ability of a system to regain structural and functional attributes that have suffered harm from stress or disturbances. Resiliency is one of the properties that enable the system to persist in many different states or successional stages. (SER 2004)

Ecosystem Resistance: The ability of a system to maintain its structure and functional attributes in the face of stress and disturbances. (SER 2004).

Ecosystem Restoration: The intentional process which initiates the recovery of an altered ecosystem to a state of ecological integrity. (MT Guiding Principles)

Ecosystem/Ecological Integrity: The condition where an ecosystem maintains its characteristic diversity of biological and physical components, spatial patterns, structure, and functional processes within its approximate range of historic variability or the reference condition. These processes include: disturbance regimes, nutrient cycling, hydrologic functions, vegetation succession, and species adaptation and evolution. (SER 2004) Ecosystems with integrity are resilient and sustainable.

Forest Ecosystem Health: (often used interchangeably with integrity) A condition where the parts and functions of an ecosystem are sustained over time and where the system's capacity for self-repair is maintained, allowing goals for uses, values, and services of the ecosystem to be met (AZ Guiding Principles).

Historic Range of Variability: The range of variability of a given metric (for example, tree density, grass and forb diversity, insect outbreak levels) during a time when natural processes were intact.

Landscape Scale: The scale, or size of a landscape, that incorporates the natural processes, function and biodiversity at a sustainable level. A landscape consists of a mosaic of two or more ecosystems that exchange organisms, energy, water and nutrients. (SER 2004)